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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,174	07/31/2003	Bin Li	BAE-00585	3739

42640 7590 05/04/2005

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EXAMINER

YOHA, CONNIE C

ART UNIT PAPER NUMBER

2827

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/631,174

Applicant(s)

LI ET AL.

Examiner

Connie C. Yoha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 10-14 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-5 is/are allowed.
- 6) ☐ Claim(s) 10 and 12-14 is/are rejected.
- 7) ☐ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

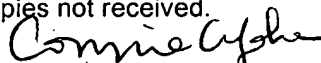
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


CONNIE C. YOH
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-5 and 10-14 are elected from the restriction requirement.
2. Claims 1-5 and 10-14 are pending.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pashmakov, Pat. No. 6831856.

With regard to claim 10, Pashmakov discloses a read circuit for reading data from a non-volatile memory, the read circuit comprising: a chalcogenide storage element (fig. 1, 14) (col. 4, line 45-47); a read control circuit (fig. 1, 19) for receiving a read_enable input, an address_column input to generate a column_read signal (col. 3, line 61-col. 4, line 2); a current-to-voltage circuit (fig. 10, 106) coupled to said read control circuit (fig. 1, 19) and said chalcogenide storage element (fig. 1, 14), for sensing a current flowing through said chalcogenide storage element during a read operation under the control of the read control circuit (col. 13, line 30-50); a row decoder circuit (fig. 1, 16) couple to

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the chalcogenide storage element (fig. 1, 14) receiving an address input (col. 10, line 64-67). However, Pashmakov does not specifically disclose that the row decoder circuit receiving a clock input. However, Pashmakov does disclose that the row decoder (fig. 1, address circuitry) is receiving plurality of operating control signals to operating the program and the reading operation of the memory cells (col. 3, line 61-col. 4, line 11). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to recognize that although silence, the plurality of operating controls signals received by Pashmakov's row decoder circuit (fig. 1, address circuitry) may also include a clock input signal, since clock signal is conventionally known to be one of the control signal used to control the reading and the writing operation of the memory device.

With regard to claim 12, Pashmakov discloses wherein said chalcogenide storage element is capable of changing from an amorphous phase to a crystalline phase, or vice versa, via an application of an appropriate amount of current (fig. 1, line 34-50).

With regard to claim 13, Pashmakov discloses wherein said flow-through current is 1 mA and 0.5 mA when said chalcogenide storage element is in said amorphous phase and said crystalline phase, respectively (col. 7, line 60-col. 10).

With regard to claim 14, Pashmakov discloses wherein said read circuit further includes a buffer for buffering output voltages from said current-to-voltage converter circuit (fig. 10, 115) (col. 14, line 35-41).

Allowable Subject Matter

4. Claim 1-5, 11 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not show in combination with other features, a chalcogenide storage element, a voltage limiting circuit and a current-to-voltage converter circuit, coupled to the voltage limiting circuit, for converting a current pulse read from said chalcogenide storage element to a voltage pulse during said read operation. The prior art also does not disclose the current-to-voltage circuit include a p-channel transistor, an n-channel transistor and an inverter.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Roesch et al (6049447), Ivanov et al (6807040), Lowrey (6687153), and Van Brocklin et al (6879525) disclose a phase-change memory device.

6. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

7. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (571) 272-1799.

The examiner can normally be reached on Mon. - Fri. from 8:00 A.M. to 5:30 PM.

The examiner's supervisor, David Nelms, can be reached at (571) 272-1787.


The fax phone number for this Group is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0956.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov> should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



C. Yoha

April 2005



CONNIE C. YOHA
PRIMARY EXAMINER